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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RIDER, LANCE W	

ART UNIT	PAPER NUMBER
1618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,749	MELKER ET AL.	
	Examiner	Art Unit	
	LANCE RIDER	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *57-90* is/are pending in the application.

4a) Of the above claim(s) *68-69 and 86-90* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *57-67 and 70-85* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :06/29/2007, 08/09/2007, 02/27/2008, and 10/30/2008.

DETAILED ACTION

Status of Claims

Claims 57-90 are currently pending, claims 68-69 and 86-90 have been withdrawn due to the election requirement filed on November 20th 2009.

Election/Restrictions

Applicant's election of Group I claims 57-87 and the species of disease epilepsy in the reply filed on December 21st 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 68-69 and 86-90 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected groups and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 21st 2009.

Information Disclosure Statement

The Information Disclosure Statements (IDS)s, filed by applicant on June 29th 2007, August 9th 2007, February 27th 2008, and October 30th 2008 have been considered by the examiner in the present case.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 57-59, 61-67, and 70-85 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 57, 66, and 77 recite the term "target marker" in reference to a therapeutic drug. What is a target marker? Is it the drug itself, a metabolite of the drug, a biological marker caused by administration of the drug? Claims 58-59, 61-67, and 70-85 are also rejected as they depend off of claim 57 and do not rectify the indefinite nature of this claim.

Claim 59 recites the phrase “indicative of a therapeutic drug”, how is the target marker “indicative” of the drug. How does it indicate the presence of the drug?

Claim 64 recites the term "its" it is unclear what the antecedent basis for this pronominal is. Is it the level of the drug, the therapeutic effect seen?

Claim 76 recites the term “technology” for multiple sensor types. The claim requires a sensor, and a sensor technology is not a sensor. As such all the types of sensor technology present in the claim are considered indefinite.

Claim 77 recites the term “unique electronic fingerprint”. What is a unique electronic fingerprint? Does the sensor produce an electronic image of a fingerprint? Does the sensor produce a specific electronic signal upon interaction with a substance?

Claim 80 recites the term "detected with a predetermined signature profile". What is a predetermined signature profile and how is it able to detect a target marker? It is a type of sensor?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 57-61, 63, 67, 72, 74, 76-81 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones, A.W. (British Journal of Clinical Pharmacology, 1988).

Though the search was not expanded beyond the elected species, art that read on the claims outside of this election was found. In an effort to advance prosecution rejections based on this art have been included in the following rejection.

Jones discloses a method of monitoring a patient during the oral administration of the therapeutic drug ethanol (see claim 80), exposing a gas chromatograph to the gases expired from the patients and detecting the concentration of both acetylaldehyde (a metabolite of the drug and a target marker) and ethanol (the drug itself) from the patients' breath, meeting the limitations of instant claims 57-61, 63, 66, 74, and 76-77. (See page 213, paragraphs 1-5.) The pharmacokinetics of the ethanol was studied over time, meeting the limitations of instant claim 67. (See page 213, paragraphs 3 and 4.) The detection of the compounds was performed by capturing the breath of the patients

periodically every 15 minutes, meeting the limitations of instant claims 72 and 81. (See page 215, paragraph 2.) The sensor showed a unique fingerprint for both compounds, the data was recorded from the sensor, and the data was transmitted to a printer, meeting the limitations of instant claims 77-79. (See page 216, figure 1.) The compounds ethanol and acetylaldehyde were compared with known standards that gave a predetermined signature on a gas chromatograph, meeting the limitation of instant claim 80. (See page 214, paragraph 6.)

Claims 57-59, 61-67, 70-72, 74, 76-80, and 83-84 are rejected under 35 U.S.C. 102(b) as being anticipated by Katzman International Patent Application Publication WO 98/29728.

Katzman discloses methods for monitoring patients during the therapeutic administration of an anti-epileptic drug (paraldehyde and trimethadione) comprising administering the drug orally or intravenously, exposing a sensor such as a mass spectrometer to expired gases from the patient and detecting the concentration of drug markers for the drug (the drugs themselves or their metabolites), meeting the limitations of instant claims 57-59, 61-63, 70, and 76. (See page 8, lines 22-29, page 7, line 26, and page 11, lines 2-3.)

Katzman discloses using the system for therapeutic drug monitoring by determining the concentration of the drug in the blood of a subject and adjusting the value accordingly to achieve a therapeutic amount in the patient, meeting the limitations of claims 64-67 and 84. Katzman uses numerical values for the actual concentrations of

the drug compounds in the blood which can move up and down, meeting the limitations of instant claims 64 and 84. (See page 15, lines 4-14, and page 17, lines 1-7.) Katzman discloses that the drug monitoring of the breath can occur in real time i.e. continuously and directly to the sensor, meeting the limitations of instant claims 71 and 83. (See page 16, lines 14-16.) Katzman also discloses that monitoring of the breath can also be after a "suitable period of time" after administering the drug, meeting the periodic monitoring limitation of instant claim 72. Katzman discloses measuring the therapeutic drug cyclosporine, meeting the limitation of instant claim 74. (See example 5.) Katzman also discloses analyzing drugs based on their metabolites such as CO_2, isotopically labeled metabolites, and the drugs themselves (such as paraldehyde), meeting the limitations of a "unique electronic fingerprint" and "a predetermined signature profile" in instant claims 77 and 80. Regarding claims 78 and 79, Katzman uses a mass spectrometer to acquire data which inherently transmits an electronic signal from the ion detector to a computer and records this data (either on a computer screen, by priniting, or on a recordable memory medium like a computer hard drive).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims s 57-67, 70-72, 74, 76-81, and 83-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katzman International Patent Application Publication WO 98/29728 in view of Jones, A.W. (British Journal of Clinical Pharmacology, 1988).

Katzman teaches methods for monitoring a patient during the administration of a therapeutic drug as discussed above. Katzman states that any drug metabolite could be tracked by this method as long as it is exhaled and the marker to be tracked is

dependent upon the drug administered. The choice of any particular metabolite would be determined during routine experimentation such as clinical trials. (See page 13, 1-5.) Thus Katzman understood the invention to be useful for tracking any metabolite that was known from clinical trials and was capable of being measured by a mass spectrometer.

Katzman does not disclose a specific marker such as acetylaldehyde, as recited in instant claim 60. Katzman also does not explicitly disclose recording data from a sensor, or transmitting data from a sensor.

Jones teaches methods for monitoring ethanol and its metabolite acetylaldehyde in a breath test. (See page 213, paragraphs 1-5.) The sensor showed a unique fingerprint for both compounds, the data was recorded from the sensor, and the data was transmitted to a printer, meeting the limitations of instant claims 77-79. (See page 216, figure 1.)

It would have been prima facie obvious to one of ordinary skill at the time of the invention to combine the methods of detecting acetylaldehyde in a breath test taught by Jones into the breath test methods disclosed by Katzman in order to develop an improved breath test which could recognize drugs whose metabolites contained acetylaldehyde. One would have been motivated to make this combination in order to expand the range of drugs able to be tested. It would have been further obvious to record and transmit the data as disclosed by Jones in order to distribute and keep the data for future use.

Claims 73 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katzman International Patent Application Publication WO 98/29728 and Jones, A.W. (British Journal of Clinical Pharmacology, 1988) as applied to claims 57-67, 70-72, 74, 76-81, and 83-84 above, and further in view of Raitasuo, V. et al., (Psychopharmacology, 1994).

Katzman and Jones teach methods for monitoring a patient during the administration of a therapeutic drug as discussed above. Katzman specifically teaches monitoring two anti-epileptic drugs.

Katzman and Jones do not teach monitoring the drugs Carbamazepine, Diazapam, and Oxcarbazepine.

Raitasuo teaches that Carbamazepine, Diazapam, and Oxcarbazepine are all anti-epileptic drug molecules used in patients. (See page 116, paragraph 5.)

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to substitute the anti-epileptic drugs Carbamazepine, Diazapam, and Oxcarbazepine taught by Raitasuo for the anti-epileptic drugs used in the methods of Katzman and Jones in order to form a new method capable of detecting different anti-epileptic drugs. This is merely a simple substitution of one art recognized anti-epileptic drug for another. The skilled artisan would have predicted that substitution of almost any drug would have functioned in the method disclosed by Katzman and Jones as the method uses generalized chemical identification systems such as mass spectrometers, which would allow for the identification of almost any drug.

Claim 85 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katzman International Patent Application Publication WO 98/29728 and Jones, A.W. (British Journal of Clinical Pharmacology, 1988), and Raitasuo, V. et al., (Psychopharmacology, 1994) as applied to claims 57-67, 70-81, and 83-84 above, and further in view of Korte, et al., U.S. Patent 4,757,198.

Katzman, Jones, and Raitasuo teach methods for monitoring a patient during the administration of a therapeutic drug as discussed above.

Katzman, Jones, and Raitasuo do not teach the use of a portable sensor.

Korte teaches a economical and portable mass analyzer (mass spectrometer). (See column 12, lines 49-64.)

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use the portable and economical mass analyzer taught by Korte to perform the sensing in the methods taught by Katzman, Jones, and Raitasuo in order to more cheaply perform the methods and to allow for mobile/portable monitoring of a patients drug responses.

Claim 82 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katzman International Patent Application Publication WO 98/29728 and Jones, A.W. (British Journal of Clinical Pharmacology, 1988), Raitasuo, V. et al., (Psychopharmacology, 1994), and Korte, et al., U.S. Patent 4,757,198 as applied to claims 57-67, 70-81, and 83-85 above, and further in view of Guth U.S. Patent 4,292,978.

Katzman, Jones, Raitasuo, and Korte teach methods for monitoring a patient during the administration of a therapeutic drug as discussed above.

Katzman, Jones, Raitasuo, and Korte do not teach drying the expelled breath of the patient.

Guth teaches a removable mouthpiece for use in breath analysis testing which dries the expired gases from the breath. (See the abstract.) Guth teaches that the mouthpiece keeps saliva from being transfered from one user to the next. (See column 3, lines 60-65.)

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use the removable drying mouthpiece for breath testing taught by Guth in the methods taught by Katzman, Jones, Raitasuo, and Korte in order to prevent buildup of saliva and water in the sensor, and to prevent transfer of saliva and liquids from one patient to the next preventing infections.

Conclusion

No claims are currently allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LANCE RIDER whose telephone number is (571)270-1337. The examiner can normally be reached on M-F 11-12 and 1-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Hartley can be reached on (571)272-0616. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LANCE RIDER/
Examiner, Art Unit 1618

/Eric E Silverman/
Primary Examiner, Art Unit 1618